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ABSTRACT

The development phase of the project, designed to produce occupational and job cluster curricula for the field of construction in grades 9-12, took place from July 1971 through December 1972. Two exploration-level documents and two sets of preparation-level documents were to be developed. The project staff, assisted by an advisory committee, selected a 10-step plan for production of the instructional materials incorporating national and international research and consultation with the educational and industrial fields. A specifically designed field test was conducted for one and one-half school years by a national advisory committee in three school districts which met the selection criteria. Evaluations and recommendations throughout the project came from: the advisory committee members; field test visitations; interviews with students, teachers, counselors, and administrators; and status reports from instructors, counselors, and administrators. Eight basic recommendations which were incorporated into the final products dealt with: need for illustrations in student manuals (including women and minorities), reduced size and bulk of the documents, use of simple language in student manuals, and expansion of exploration segments in instructor's guide. Appended are advisory committee and consultant lists, names of field testing schools, and visitation agendas. (Author/MS)

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FINAL REPORT

Grant Number OEG-0-71-4664

William H. Fitz, Director
Department of Occupational Education and Technology
Texas Education Agency
201 East Eleventh Street
Austin, Texas 78701

July 1975

Project Staff
Joseph Tokash - Project Coordinator
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CE 004 794

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AUTHOR'S ABSTRACT

The Texas Education Agency was awarded an initial grant from the United States Office of Education under the provisions of Part I of the Vocational Education Amendments of 1968. This grant of $150,000 was awarded for the purpose of developing occupational and job cluster curricula for the field of construction grades 9-12. The grant period was from July 1, 1971, through December 31, 1972. During this period, instructor and student materials were developed utilizing selected consultants and an advisory committee.

The original grant was then increased by an additional $242,786 to cover the field testing, revision, publishing and dissemination of the validated products. This continuation period was from January 1, 1973, to June 28, 1975. During this period, the original developmental advisory committee was replaced by a national advisory committee made up of representatives from major associations of the construction industry. Three Texas school districts were selected for a formal field testing of the materials.

Evaluation of the field testing of products and processes involved in the curriculum projects were conducted by visitations of the national advisory committee members, local teachers and administrators, student interviews, and Texas Education Agency and United States Office of Education staff.

Recommended revisions and modifications were incorporated and the final products were edited, rewritten, illustrated, typeset and printed. The printing was assigned to the United States Government Printing Office as specified under the grant. Dissemination was made during the last week in July 1975.

A total of 15 documents were produced under this grant--7 instructor's guides, 7 student handbooks, and an articulation guide.

Acknowledgments

The project staff acknowledges the many excellent contributions by outstanding individuals and organizations in the construction industry. First and foremost are the members of both developmental and field testing advisory committees. Special mention must also go to the administrators, instructors, and students of the cooperating field testing school districts.

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INTRODUCTION

For whatever reasons men and women work, it is clear that most people have and will continue to work in the future. Work responds to something profound and basic in human nature; it plays a pervasive and powerful role in the psychological, social, and economic aspects of our lives. Furthermore, it is an institution and a central one. As such, it influences and is influenced by, other basic institutions—family, community, schools, as well as many others.

The economic importance of work is obvious and requires little comment. Work is the means by which we provide the goods and services needed and desired by ourselves and our society. Through the economic rewards of work we provide essentials for living, we satisfy many of our transient wants, and we provide for our futures.

Work also serves a number of social purposes. The workplace has always been a place to meet people, converse, and form friendships. In industrial American, the type of work performed has contributed to a basic life-style for all the family members.

Since work is important, the objective of this project is to have students explore for the purposes of choosing their areas of preparation for the world beyond school--the world of work. Understanding that different students have individual career goals, those that choose the construction industry will need guidance and basic career preparation.

The Texas Education Agency was awarded an initial grant of $150,000 from the United States Office of Education under the provisions of Part I of the Vocational Education Amendments of 1968 to develop instructional materials for the field of construction and utilizing the career education concept. The grant specified that these materials be designed primarily for secondary-level students, grades 9-12. A description of the curriculum project now follows.

THE CURRICULUM PROJECT

Development

The original grant from the U.S. Office of Education was for the development of two exploration-level documents and two sets of preparation-level documents. The exploration phase of the project called for an instructor's guide and a student resource manual. The exploration sequence was to provide a suggested program whereby a student could experience representative high frequency tasks for the

purpose of making career decisions. The basic question of the exploratory experience is whether or not the student wants to continue training towards a career in construction. The shop or laboratory structured around the instructor's guide provides the student with exploration experiences. The Student Resource Manual provides in-depth guidance information to complement the "hands on" tasks of the shop or laboratory.

The preparation-level instructor's guides and student resource manuals were designed for those students who have elected to prepare themselves for a career in construction. A total of 33 separate instructional programs clustered into six instructional families makes up the preparation-level instructor's guides. Complimenting these six instructor's guides are six student resource manuals which are designed to be used as mini-texts.

A developmental advisory committee was established to assist the project staff in selecting an overall project plan for the production of instructional materials. (See Appendix A for names and associations represented on developmental advisory committee.) The production plan which was adopted called for:

1. A national search of available literature relating to construction programs
2. Contact with six foreign governments for construction information
3. Utilization of the Construction Specification Institute (CSI) clustering of jobs into job families
4. Specific analysis of occupations within each job family
5. Hiring of industrial and educational consultants for areas within each job family during the summer of 1972 (see Appendix B for list)
6. Formulation of an operational format for instructor's guides and student manuals
7. Development of production flow chart and schematic
8. Validation of task lists produced by consultants by selected incumbent workers and supervisors
9. Writing and sequencing of objectives and sub-objectives
10. Writing and reproduction of draft copies of materials

The time allocated for the development phase was actually less than 18 months and there was no indication that this grant would be extended to include a field-testing period. As a result, both instructor guides

and student manuals had to be produced simultaneously. This type of production plan led to some difficulties in correlating these documents. A major task was to adjust these separate documents to fit the job-family framework.

The period for the original grant was from July 1, 1971, through December 31, 1972.

Field Testing

Rather than print and disemminate untried and unvalidated instructional materials, it was decided that the original grant would be extended to provide field testing of the documents. The original grant was then increased by an additional $242,786 and the period extended from January 1, 1973, to June 28, 1975.

The overall project field test design was as follows:

Before field test

- working understanding and agreement with local education agency superintendent, other administrators, and related state program people
- space and facilities arrangements
- selection and qualifications of field testing personnel
- inservice of teachers, instructors, and counselors
- purchase and organization of equipment, supplies, and supplementary instructional materials
- print necessary field test copies
- program articulation and writing of field test implementation guide
- scheduling of representative students
- selection of national advisory committee members

During field test

- pretest of students
- articulation (continued)
- monitor functions at test sites
- evaluations
  - .. national advisory committee
  - .. student and teacher interviews
  - .. local administration
  - .. parents
  - .. third-party team
- post-test of students
- problems encountered during field test
  - .. resistance of existing program people
  - .. scheduling changes
  - .. testing of the materials

... alternative inputs
... testing of suggested revisions
.. availability of space
.. certification of instructors
.. academic support
.. split campuses

After field test

. final evaluations and recommendations from all parties
. revision of materials
. development of articulation guide
. final printing
.. illustrations added
.. cover designs
.. production of camera-ready copy
.. contract for printing (GPO)
. dissemination of materials

The continuation grant also included provisions that a construction orientation curriculum be developed for grades 7 and 8. Also, an articulation guide would be developed addressing specific construction program articulation problems.

After considerable research, the project staff recommended that the existing World of Construction--a McKnight-McKnight publication--which was specifically designed for grades 7 and 8, be used as a construction orientation program. The United States Office of Education approved this request and development of a separate orientation program was dropped from the continuation grant work scope.

During the field testing phase of the Construction Curriculum Project, it was decided that the developmental advisory committee had completed their work and a new advisory committee, more national in scope, was needed. This new advisory committee would be made up of representatives from national construction associations and organizations. These members and the associations which they represent are listed in Appendix C.

The members of the national advisory committee were charged with the responsibility of evaluating program operations and make recommendations for revisions and modifications. Each member received advanced draft copies of all instructor's guides and student manuals which were to be tested in the cooperating school districts.

An organizational committee meeting was held in Washington, D.C., and a chairperson--Mr. Richard Burns--was elected. Two visitation sessions of the committee were held in Texas for the purpose of evaluating the program in operation. (See Appendix E1, E2, and E3 for Agendas covering committee visitation dates and schools visited.)

The selection of school districts, who would assist the Texas Education Agency in the field testing and validation of materials, was made by this criteria.

1. School districts should be representative of a cross section of various socioeconomic school populations.

2. School districts should have established building trades, drafting and other preparation-level vocational programs.

3. School officers would provide space and facilities for exploration component.

4. School officers should submit statements of qualifications on new personnel to the Texas Education Agency.

5. School personnel would agree to special inservice sessions.

6. School personnel would agree to comment and evaluate materials tested.

7. Willingness of school administrators and instructors to test products.

The selection of three school districts was made for the formal field testing of the construction curriculum materials. (See Appendix D for list of schools.)

Instructors and other school personnel were brought together in Dallas during July 1973 for inservice training relating to the start up of the field testing program. The project staff also visited the school districts in August 1973 to assist in planning the exploration-level laboratories. The exploration laboratories were established as new classes and the preparation-level curriculum materials were tested utilizing ongoing vocational laboratories within the district.

The total field test program lasted one and one-half school years terminating in December 1974. From January 1975 through March 1975, evaluations and recommendations were reviewed by the project staff. These evaluations and recommendations were made by members of the advisory committee, student and teacher interviews, local administrators and Texas Education Agency staff.

EVALUATIONS AND RECOMMENDATIONS

During the latter months of the developmental phase of this curriculum grant, the project director and project coordinator were called to Washington, D.C., to meet with Dr. William Pierce, Deputy Commissioner of Occupational and Adult Education, U.S. Office of Education. This meeting was to discuss certain program objections of the International Brotherhood of Operating Engineers. As a result of this meeting, it was decided to stop all curriculum production work for the heavy equipment segment at the preparation level.

Because of this and other opposition to this project, primarily from organized labor, early attempts to recruit advisory committee members from organized labor failed. However, during the field-test phase, the advisory committee did expand to include a labor representative. Because of this, the committee gained immeasurably from this labor input.

Throughout the project, the advisory committee members were encouraged to make overall and specific evaluations and recommendations. These were most informative and represented a composite of labor, management, and educational interests. Most of these recommendations and evaluations were a result of the two field test visitations scheduled by the project staff. In each case, two school districts were visited by the advisory committee. During these school visitations, the committee members interviewed students, teachers, counselors, and administrators. They inspected facilities, tools, equipment, projects, and instructional materials. Many valuable suggestions resulted from these site visits by the committee.

The project staff also interviewed five randomly selected students from each field-test site. These interviews lasted a minimum of fifty minutes each. The interviews covered exactly the same questions and allowed some time for students to make additional comments.

The project staff also made periodic visits to field-test sites to obtain status reports from instructors, counselors, and administrators. Written reports were also submitted by instructors including recommendations at the end of each of the three test semesters. The project staff also recruited professional staff from other Texas Education Agency divisions to make program evaluations when visiting the three districts involved in field testing. The guidance and research divisions were particularly helpful.

During the summer of 1974, one instructor was selected from each site and asked to come to Austin for program evaluations and recommendations. The average time spent in Austin by these instructors was two days and the project staff reviewed the program objective by objective. Tool and equipment lists were compiled by the exploration instructors for inclusion into the exploration instructor's guide.

Basic recommendations that were incorporated into the final products could be condensed into these general areas:

1. Need for illustrations in student manuals
2. Reduce bulk of all documents
3. Reduce size of all student manuals to 5 1/2" x 8"
4. Use simple sentences and language in student manuals
5. Expand certain exploration segments in instructor's guide
6. Develop and design covers
7. Include women and minorities in illustrations
8. Combine documents where practical

PRINTING AND DISSEMINATION

After all evaluations and recommendations were considered by the project staff and revisions were made in the original documents, it was decided to subcontract the production of camera-ready copy. The subcontractor (Search Associates, Inc., Des Plaines, Illinois) would also provide editorial, illustrating, proofing, and some rewriting services. The project coordinator worked with the subcontractor in the performance of contracted services.

The production of camera-ready copy of the 15 documents was completed in three phases and the project coordinator prepared the necessary publication forms for the U.S. Government Printing Office. Materials were submitted to GPO in three installments. Materials were delivered to the Texas Education Agency and 200 sets were assembled, packaged, and disseminated to educators throughout the United States and Trust Territories. The dissemination was planned in conjunction with the U.S. Office of Education program specialists. The dissemination list also included one set of materials to each member of the national advisory committee. (See Appendix F for dissemination schedule.)

The Superintendent of Documents made additional copies of the curriculum materials available for sale. (A completed list of titles and stock numbers is provided in Appendix G.)

Appendix A

DEVELOPMENTAL ADVISORY COMMITTEE FOR CONSTRUCTION CLUSTER

Frank Gerling
Gerling, Thomas, and Ward Engineers
903 West 38 Street
Austin, Texas 78705

Don Legge, Executive Secretary
Texas Association of Architects
Brooks, Barr, Graeber, and White
Architects
Perry Brooks Building
Austin, Texas 78701

Gerald Brown, Executive Secretary
Texas State Building Council
AFL-CIO Building
308 West 11 Street
Austin, Texas 78701

Wayne Hall
Houston Association of General
Contractors
Building Division
Perry Brooks Building
Austin, Texas 78701

Charles V. Strong
Lumberman's Association of Texas
P. O. Box 5222
Austin, Texas 78703

Brooks Porter, Sr.
Porter Plumbing and Heating Company
4119 Guadalupe
Austin, Texas 78751

Don McCullough, Executive Secretary
Texas Society of Association
Executives
4302 Airport
Austin, Texas 78722

Marvin Brown, Executive Secretary
Mechanical Contractors Association
702 International Life Building
Austin, Texas 78701

Richard Pulaski
Teacher Educator
Engineering Extension Service
F. E. Drawer K
Texas A&M University
College Station, Texas 77843

Elton Thomas, Program Officer
The Advisory Council for
Technical-Vocational Education
in Texas
Texas Education Agency
201 East 11 Street
Austin, Texas 78701

CONSULTANTS FOR CONSTRUCTION CURRICULUM
PROJECT OEG-0-71-4664 (357)

Name	Teaching Experience	Construction Industry Experience	Counseling Experience
J. Mike Wheat	4 years	5 years	13 years
Cletus Kleen	11 years	5 years Drafting Designer	-
Carland Lovelace	11 years	12 years Home Building & Industrial Construction	6 years
Richard L. Bateman	10 years	5 years Welding	-
James Dreymala	15 years	10 years Industrial Mechanics	-
Russell Walker	3 years	-	8 years
Elton McCrea	10 years	27 years	-
Jim Thogmartin	8 years	16 years	-
Lee Smith	-	33 years Pipefitter	-
Jim B. Halsell	7 years	9 years Masonry	-
John W. Perry	4 years 3 years - Administration	-	-
Charlie Battersby	4 years	44 years	-
William Gissell, Jr.	7 years	27 years Electrical Construction & Maintenance	-
Johnny E. Smith	4 1/2 years	4 years	-
LeRoy Van Booven	7 years	24 years Electrical Construction & Maintenance	-

Wilton E. Lomax	10 years	7 years Landscaping 2 years - owner retail nursery	2 1/2 years
Robert A. Clarke	9 1/2 years	5 years Metal 2 years--Contractor	1 1/2 years
Charles V. Strong	-	6 years Lumberman's Association of Texas	-
William D. West	14 years	10 years	-
Edward A. Shand	5 years	4 years Heavy Equipment Oilfield	10 years
Doyle T. Turman	2 years	22 years Heavy Equipment	-
Tom G. Die	-	27 years 6 years - Apprenticeship Training Program	-
Erle P. Schmidt	4 years	20 years Registered Professional Engineer	-
Billy Hightower	15 years	10 years	-
Nancy Lewis	4 years	-	9 years
Jim Salmon	8 years	5 years	6 years
Jan Seymour		Illustrator	
Kay Sivey		Illustrator	

NATIONAL ADVISORY COMMITTEE
CONSTRUCTION CURRICULUM PROJECT

Richard A. Burns
Assistant Dean of Instruction
Johnson County Community College
111 Quivira Road
Overland Park, Kansas 66210

Charles Chamberlain
Director of Apprenticeship Training
Associated Builders and Contractors, Inc.
P.O. Box 8733
Friendship International Airport, Md. 21240

Al Culbertson
Dunbar Construction Company
8201 Cedar Avenue
Cleveland, Ohio 44103
(AGC Education Committee)

Robert Easley
Special Assistant Director
NAACP Labor Program
1790 Broadway
New York, New York 10019

James G. Herndon
309 Real Oaks
Dallas, Texas 75217
(Science Instructor for Mesquite ISD)

Merlin Taylor
Assistant to the President
Bricklayers, Masons, and Plasterers
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815 - 15 Street, N.W.
Washington, D.C. 20005

Hugh C. Murphy
Administrator, Bureau of Apprenticeship
and Training
Department of Labor, Room 5000
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Washington, D.C. 20213

Eva Poling
Immediate Past President
National Association of
Women in Construction
Mechanical Contractors Association, D.C.
5200 Auth Road
Marlow Heights, Maryland 20023

Philip Polivchak
Director of Manpower
National Association of Homebuilders
15 and M Streets, N.W.
Washington, D.C. 20005

William F. Roark
Director, Manpower Development Division
Brick Institute of America
1750 Old Meadow Road
McLean, Virginia 22101

Robert E. Wiper
President
Search Associates, Inc.
110 River Road
Des Plaines, Illinois 60016

Appendix D

CONSTRUCTION OCCUPATIONS CURRICULUM PROJECT

Phase IV - 1973-74

Formal Field Testing Sites

Bryan Independent School District
2200 Villa Maria Road
Bryan, Texas 77801

Greenville Independent School District
P. O. Box 1022
Greenville, Texas 75401

Mission Independent School District
1116 Conway
Mission, Texas 78572

Informal Field Testing Sites

McAllen Independent School District
110 South Tenth Street
McAllen, Texas 78501

Akron Public Schools
70 North Broadway
Akron, Ohio 44308

A G E N D A

First Advisory Committee Meeting

CONSTRUCTION CURRICULUM PROJECT

National Housing Center, Board Room, Fourth Floor
9:30 a.m. - 3:00 p.m.
October 16, 1973

Michael Russo, Speaker
Acting Director of the Division of
Technical Education
U.S.O.E.

I. Introduction to members

II. Guest speaker from the U. S. Office of Education

III. Historical background

- A. Development of materials (and the career education concept)
- B. Phases of "Career Exploration" and "Career Development"
- C. Format used (on Instructor Guides and Student Resource Manuals)

IV. Scope of current work

- A. Field test validation
- B. Testing and evaluation
- C. Revising and editing
- D. Printing and dissemination
- E. Production areas
  1. Implementation Guide
  2. Teacher's Guide (7-8)
  3. Articulation Guide

V. Assignment of tasks for advisory committee members

- A. Formal meetings
- B. Visitation
- C. Interviews with students and teachers
- D. Suggested revisions and redirections
  1. Teaching methods
  2. Texts
  3. Implementation Guide
  4. Student Resource Manuals
  5. Review of final work
- E. Election of advisory committee chairperson

VI. Explanation of reimbursement procedure

A G E N D A

Second Advisory Committee Meeting

CONSTRUCTION CURRICULUM PROJECT SCHOOL VISITATION

Sunday Night - January 27, 1974

8:00 p.m. - Hospitality Session
Downtowner Motor Inn - Room 245

Monday - January 28, 1974

8:00 a.m. - Depart Downtowner Motor Inn by automobile for Bryan, Texas

10:15 a.m. - Arrive Bryan Independent School District for visitation of Construction Curriculum Occupations Project

3:00 p.m. - Depart Bryan ISD by automobile for Houston International Airport

7:15 p.m. - Depart Houston by air for McAllen, Texas

8:42 p.m. - Arrive McAllen. Check into Holiday Inn

9:30 p.m. - Dinner in Reynosa, Mexico

Tuesday - January 29, 1974

8:15 a.m. - Depart Holiday Inn for visitation of Construction Curriculum Occupations Project at Mission Independent School District

11:00 a.m. - Depart Mission ISD for lunch in McAllen

*1:00 p.m. - Arrive McAllen ISD for visitation of Construction Curriculum Occupations Project

*NOTE: Transportation will be available for those committee members leaving on Texas International Flight #640 at 3:50 p.m.

Please retain all receipts for lodging, meals, and travel for reimbursement. Forms for reimbursement will be given to you before you leave Tuesday.

AGENDA

Third Advisory Committee Meeting

CONSTRUCTION CURRICULUM PROJECT SCHOOL VISITATION

Wednesday Night, November 6, 1974:

8:00 p.m.	Hospitality Session, Cibola Inn*, Arlington (Room to be selected)

Thursday, November 7, 1974:

8:30 a.m.	Depart Cibola Inn by automobile for Greenville to visit exploration classes of the Construction Occupations Curriculum Project
12:00 noon	Lunch at Ramada Inn, Greenville
2:15 p.m.	Depart Greenville for Arlington

Friday, November 8, 1974:

6:00 a.m.	Depart Cibola Inn for Dallas/Fort Worth Airport (Flight #975)
10:30 a.m.	Conduct visitation of exploration- and preparation-level laboratories at Mission High School
1:00 p.m.	Luncheon meeting at Holiday Inn for overall visitation and program comments
	**

* Note change of place for lodging.
**Some members may want to leave after lunch.

NOTE: Please retain all receipts for lodging, meals, and travel for reimbursement. Forms for reimbursement will be given to you on Friday, November 8.

Dissemination Plan for 200 Sets (15 Guides) of Construction Occupations Guides

Bulk copies - State Curriculum Liaison Representatives	156 sets
9 - large states, 5 sets each = 45 sets	
22 - medium states, 3 sets each = 66 sets	
20 - small states, 2 sets each = 40 sets	
151 sets	
4 - territories & D.C., 1 each = 5	
156 sets	
1 set each - 10 O.E. Regional Offices	10 sets
1 set - ERIC-Northern Illinois University	1 set
1 set - AIM/ARM Center for Vocational Education, Ohio State University	1 set
1 set - O.E. Contracting Officer	1 set
1 set each - Project Advisory Commission	11 sets
1 set each - Project Coordinator and Editor	2 sets
- Office of Education	18 sets
	200 sets

CONSTRUCTION INDUSTRY SERIES

	GPO Stock Number
EXPLORATION LEVEL	
Careers in Construction - Student Manual	017-080-01415-7
Careers in Construction - Instructors Guide	017-080-01414-9
OCCUPATIONAL PREPARATION LEVEL	
Wood - Student Manual	017-080-01422-0
Wood - Instructors Guide	017-080-01416-5
Finishing - Student Guide	017-080-01455-6
Finishing - Instructors Guide	017-080-01419-0
Engineering, Support and Management Services - Student Manual	017-080-01454-8
Engineering, Support and Management Services - Instructors Guide	017-080-01451-3
Metal - Student Manual	017-080-01456-4
Metal - Instructors Guide	017-080-01423-8
Electricity - Student Manual	017-080-01421-1
Electricity - Instructors Guide	017-080-01453-0
Masonry - Student Manual	017-080-01420-3
Masonry - Instructors Guide	017-080-01452-1
Articulation Guide	017-080-01417-3